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(19) (CA) **CANADIAN PATENT** (12)

(54) CONTAINER FOR STRONG DRINKS

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**Canada**

ABSTRACT OF THE DISCLOSURE

A container for strong drinks, comprising an outer shell made of a paper sheet coated on both sides with a plastic material and, inserted therein, an inner vessel made from a polyester resin having an intrinsic viscosity of 0.5 to 1.4, said outer shell and said inner vessel being joined together around their openings to form an integral brim.

1           This invention relates to a container for  
strong drinks and, more particularly, to a container  
for strong drinks, comprising an outer shell made of a  
paper sheet coated on both sides with a plastic material  
5 (hereinafter referred to as plastic-coated paper sheet)  
and, inserted therein, an inner vessel made from a  
polyester resin having an intrinsic viscosity of 0.5  
to 1.4, said outer shell and said inner vessel being  
joined together around their openings to form an  
10 integral brim.

Japanese Utility Model "Kokai" (Laid-open)  
No. 5,572/1974 has proposed as a substitute for glass  
vessels a disposable vessel comprising a vessel made of  
uncoated paper sheet and, inserted therein, a plastic  
15 inner vessel having a thick rim and a thin-walled body.  
Although suitable for the exclusive use as a receptacle  
for soft drinks, such a container may arouse problems  
when used for strong drinks. For instance, when filled  
with hot sake (Japanese fermented liquor made from  
20 rice) and then subjected to the showering treatment  
which is an indispensable next step, it is liable  
to become deformed owing to wetting of the paper sheet  
which is an essential component of the container.  
Moreover, depending upon the type of plastics selected  
25 for the inserted vessel, the alcohol in the strong



1 drink exerts a solvent action upon the plastic vessel to  
cause partial dissolution of some constituent of the  
plastic material or partial transfer of its odor to the  
strong drink resulting in deterioration of the flavor of  
5 the latter.

Under such circumstances, the present inven-  
tors made various attempts to develop a convenient  
container for the strong drink, which, when filled with  
an strong drink and stored for a long period of time,  
10 will keep the drink from permeation to the outside,  
odor transfer from the paper sheet or plastic material,  
contamination with the plastic material by dissolution  
and deterioration in delicate flavor, not to speak of  
an agreeable aroma, of the drink and, in addition, which  
15 is improved in operational efficiencies in various  
phases of its handling such as filling, shipping,  
transportation and storing. It was found, as a result,  
that the above object can be achieved by constructing  
a container in such a way that an inner vessel made  
20 from a polyester having an intrinsic viscosity of 0.5  
to 1.4 is inserted in an outer shell made of a plastic-  
coated paper sheet and both inner vessel and outer  
shell are joined together around their openings to  
form an integral brim.

25 A few examples of embodiments of the invention  
are illustrated below with references to the accompanying  
drawings in which:

Fig. 1 is an elevation, in cross section, of a  
container according to the invention; and

30 Fig. 2 is an elevation, in cross section, of  
another embodiment of the invention.

Fig. 1 shows the case in which the polyester

1 vessel is inserted in close contact with the inner wall  
of a plastic-coated paper sheet shell. In the Fig. 1,  
1 is an outer shell made of paper sheet 2 coated on  
both sides with plastic material 3 and composed of body  
5 4 and bottom 5, both being jointed to form an integral  
outer shell. 6 is a vessel made from a polyester  
having an intrinsic viscosity of 0.5 to 1.4 and is  
inserted in plastic-coated paper sheet shell 1 in  
close contact with the inner wall of the latter. The  
10 upper edge of body 4 of the plastic-coated paper sheet  
shell is flared to form flat flange 7 and rounded rim  
8. The upper edge of polyester vessel 6 is also flared  
to form flat flange 9 approximating in pattern and size  
to the flange 7 and rounded rim 10. Both shell and vessel  
15 are assembled so that flange 9 is superposed upon flange  
7 and the assembly is joined together by double  
seaming to integrate the shell and vessel along rims  
8 and 10.

In the above example of the embodiment, the  
20 rims of both shell and vessel are in the form of flat  
flange. However, the rims are not limited to the  
flange form, but can be in beaded form. It is also  
possible to effect the integration by joining together  
the flanges of both shell and vessel with an adhesive  
25 instead of the double seaming.

Further, although in the above example the  
polyester vessel has a thick rim and a thin body wall  
in contrast to body 4 of plastic-coated paper sheet

1 shell 1, other structures are possible. In joining  
together the rims 8 and 10 by double seaming, the rim  
of polyester vessel 6, no matter whether it is beaded  
or in the form of flange, should have a thickness just  
5 sufficient to withstand the operation of double seaming,  
while the wall thickness of the body adjoining to the  
rim can be as small as a thin film sufficient for  
receiving the strong drink. Therefore, the construction  
shown in the above example is preferred. One of the  
10 suitable methods for fabricating such a polyester vessel  
is so-called vacuum forming or pressure forming of  
a polyester sheet having a thickness of the flange 2.  
The structure of the plastic-coated paper sheet shell  
is not limited to that illustrated in the above example  
15 which is composed of the body and the bottom which are  
produced separately and bonded together.

Fig. 2 shows an example in which some  
clearance 11 is provided between the inserted polyester  
vessel and the plastic-coated paper sheet shell. The  
20 numerical notation is the same as used in Fig. 1.

The plastic material to be coated on both  
sides of the paper sheet constituting the paper shell  
used in the container of this invention may be freely  
selected, because it does not come into direct contact  
25 with the strong drinks.

The polyester vessel used in this invention is  
made from a linear polyethylene terephthalate homo-  
polymer or linear polybutylene terephthalate homopolymer

- 1 consisting of recurring units of ethylene terephthalate  
or butylene terephthalate respectively, a copolymer  
comprising a small proportion of comonomer units in  
addition to the above recurring units, a blend of such  
5 homopolymers or copolymers, or a blend of such homo-  
polymer and such copolymer.

The comonomers include dicarboxylic acid  
components such as isophthalic acid, adipic acid,  
sebacic acid, p- $\beta$ -hydroxyethoxybenzoic acid, and alkyl  
10 ester derivatives thereof and glycol components such  
as ethylene glycol, butanediol, hexamethylene glycol,  
neopentyl glycol, and cyclohexanedimethanol.

The polyester vessel for use in the container  
of this invention can be fabricated by the method  
15 described in Japanese Patent Publication No. 5,107/1969  
or No. 5,108/1969, in accordance with the use of the  
container, or by any other suitable method.

The polyester resin to be used as the material  
in fabricating the polyester vessel should have an  
20 intrinsic viscosity in the range of from 0.5 to 1.4,  
preferably from 0.6 to 1.2. If the intrinsic viscosity  
is below 0.5, the resin has a low alcohol resistance  
and is not suitable for the container intended for  
long-term use; also, such a resin has a low impact  
25 resistance. Accordingly the polyester vessel is  
liable to become deformed even by a slight impact  
exerted during the operation of inserting it into the  
plastic-coated paper sheet shell. If, on the other hand,

1 the intrinsic viscosity exceeds 1.4, the moldability  
of the resin becomes insufficient for the fabrication  
of a vessel with uniform thickness. The intrinsic  
viscosity given above is the value determined at 25°C  
5 in a solution of a phenol-tetrachloroethane mixture  
(1:1 by weight).

The strong drinks to be filled in the container  
of this invention include sake, whisky, brandy, gin,  
vodka, wine, cocktails, shochu and fruit wines such  
10 as plum liqueur and others.

As fully described above, since the container  
of this invention has an outer shell, including the  
bottom thereof, which is made of a paper sheet coated  
on both sides with a plastic material, the filled  
15 container retains its original shape even after subjected  
to the showering treatment which is a necessary step  
for the container filled with sake at an elevated  
temperature. When the sake packed in the container is  
requested to be served hot, the filled container can  
20 be directly immersed in hot water without any harm.  
When the sake is intended to be served cold, the filled  
container can be cooled or preserved in a refrigerator  
without causing either condensation of moisture on the  
outside surface of said container or deformation of  
25 said container due to moisture absorption, because  
the outer shell is made of a plastic-coated paper sheet.

The polyester vessel inserted in the plastic-  
coated paper sheet shell is made from a polyester resin



1 having an intrinsic viscosity of 0.5 to 1.4, which is  
excellent in mechanical properties and chemical  
resistance, particularly in alcohol resistance. As a  
consequence, the polyester vessel is substantially  
5 inert to the solvent action of the alcohol contained  
in the strong drink filled in the polyester vessel, the  
dissolved amount of the polyester being too small to  
affect the odor or taste of the drink. The polyester  
vessel is free from the adverse effect of a plasticizer  
10 or a residual monomer contained in the polymer on the  
human body as is the case with a polyvinyl chloride  
resin. Since the polyester vessel itself is odorless,  
it causes no change in aroma and delicate taste of the  
strong drink. Moreover, the polyester vessel has an  
15 extremely low permeability to oxygen and carbon dioxide  
and there is no fear of degeneration in the quality of  
strong drink caused by these gases. Thus, it has now  
become possible to preserve strong drinks for a long  
period of time.

20 If a strong drink is filled in a container  
made of a paper sheet overlaid on one side with a  
plastic film, there will occur a phenomenon of oozing  
of the strong drink from the jointed part of the  
container, whereas the container of this invention is  
25 entirely free of such a phenomenon.

The fabrication of the container of this  
invention is performed with a high efficiency, because  
it is carried out simply by assembling the plastic-

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1 coated paper sheet shell and the polyester vessel which  
are separately provided and integrating the assembly  
along the rims of both shell and vessel by a simple  
means. The finished container is much lighter in  
5 weight as compared with a glass vessel of the same  
capacity, resulting in easier handling and improved  
efficiency in shipping, transportation and storing. The  
unprecedented features of the container are the outcome  
of this invention.

WHAT IS CLAIMED IS:

1.           A container for strong drinks, comprising an outer shell made of a paper sheet coated on both sides with a plastic material and, inserted therein, an inner vessel made from a polyester resin having an intrinsic viscosity of 0.5 to 1.4, said outer shell and said inner vessel being joined together around their openings to form an integral brim.
2.           A container for strong drinks according to claim 1, wherein the inner vessel is inserted in close contact with the outer shell.
3.           A container for strong drinks according to claim 1, wherein the inner vessel is inserted in the outer shell with a clearance therebetween.



FIG. 1

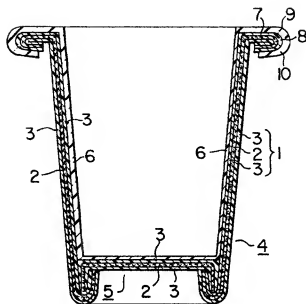
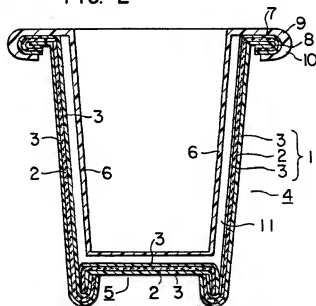


FIG. 2



Gowling & Henderson